

IN THE CLAIMS

Please amend the claims as follows.

CLAIMS

1. (currently amended) A rotary displacement machine (10)-with radial pistons-(19);
rotary displacement machine-(10), comprising:

- a supporting structure (11,12);
- a centrally mounted distributor (15);
- a rotating unit (16)-consisting of a rotor (17) provided with a number of radially extending cylindrical chambers (18), wherein each chamber (18) contains a respective piston (19) mounted for sliding movement in a first direction along a first axis (a)-coaxial with the longitudinal centerline of the respective cylindrical chamber-(18); and
- means-(30,31) of bucking the radial thrust from the pistons-(19), said means (30,31) forming a bearing-(29) in combination with a thrust ring-(28);

the rotary displacement machine-(10) being characterized in that:

- said bearing-(29) comprises a rotating inner ring-(28), a stationary outer ring-(30), and intervening rolling means-(31), said rotating inner ring-(28) including engagement means (43,45)-for each piston-(19), said engagement means-(43,45) allowing movement in a straight line along a first direction defined by a second axis-(b) perpendicular to said first axis-(a).

2. (currently amended) A rotary displacement machine-(10) as claimed in Claim 1, wherein said engagement means (43,45)-are sliding engagement means.

3. (currently amended) A rotary displacement machine (10)-as claimed in Claim 2, wherein said engagement means (43,45)-comprise a slide rail (43) attached to said ring (28), and a slide (45)-attached to the head of said piston-(19), said slide (45)-being a flat slide-(45), so that the relative paths of movement of said slide-(45) and said slide rail-(43) are straight paths of movement along said axis-(b).

4. (currently amended) A rotary displacement machine-(10) as claimed in Claim 1 ~~any of the preceding claims~~, wherein the force of the piston-(19) is transferred to the thrust ring (28) through a hydraulically balanced end surface.

5. (currently amended) A rotary displacement machine ~~(10)~~ as claimed in Claim 1 ~~any of the preceding claims~~, wherein at least one of said pistons ~~(19)~~ is provided with a closed seal ring.

6. (currently amended) A rotary displacement machine ~~(10)~~ as claimed in Claim 1 ~~any of the preceding claims~~, wherein at least one of said pistons ~~(19)~~ is facing said distributor ~~(15)~~ with a face shaped to fill unwanted clearance.

7. (currently amended) A rotary displacement machine ~~(10)~~ as claimed in Claim 1 ~~any of the preceding claims~~, wherein at least one piston ~~(19)~~ is formed with at least one lightening hole ~~(46)~~.

8. (currently amended) A rotary displacement machine ~~(10)~~ as claimed in Claim 7, wherein the longitudinal axis of said hole ~~(46)~~ extends transverse to the axis ~~(a)~~ of the piston ~~(19)~~ and does not cross a hydraulic balancing hole ~~(47)~~ formed in the piston ~~(19)~~.

9. (currently amended) A rotary displacement machine ~~(10)~~ as claimed in Claim 3 ~~any of Claims 3-8~~, wherein one of said pistons ~~(19)~~ locates fully inside the respective radial cylindrical chamber ~~(18)~~, and at least a portion of said slide rail ~~(43)~~ locates inside said radial cylindrical chamber ~~(18)~~.

10. (currently amended) A rotary displacement machine ~~(10)~~ as claimed in Claim 1, wherein at least one of said bearings ~~(29, C1-C4)~~ is an integral bearing.

11. (currently amended) A rotary displacement machine ~~(10)~~ as claimed in Claims 3 ~~and 10~~, wherein the ring ~~(28)~~ has advantageously a sinusoidal shape, such that it can accommodate two sets of rolling bodies ~~(31)~~ in two side races, they being placed on one side of said slide rail ~~(43)~~.

12. (currently amended) A rotary displacement machine ~~(10)~~ as claimed in Claim 10, wherein at least one of said bearings ~~(29, C1-C4)~~ mounts an unsplit disk cage ~~(GAB)~~.

13. (currently amended) A rotary displacement machine ~~(10)~~ as claimed in Claim 12, wherein each unsplit disk cage ~~(GAB)~~ is mounted peripherally of the respective set of rolling bodies ~~(31)~~.

14. (currently amended) A rotary displacement machine ~~(10)~~ as claimed in Claim 10, wherein at least one of said bearings ~~(29, C1-C4)~~ mounts a plurality of rolling bodies in interference fit relationship.

15. (currently amended) A rotary displacement machine ~~(10)~~ as claimed in Claim 1, wherein said rotor ~~(17)~~ and thrust ring ~~(28)~~ are controlled to rotate synchronously by a synchronization device ~~(50)~~.

16. (currently amended) A rotary displacement machine ~~(10)~~ as claimed in Claim 15, wherein said synchronization device ~~(50)~~ is a cross coupling ~~(50)~~.

17. (currently amended) A rotary displacement machine ~~(10)~~ as claimed in Claim 1, wherein said distributor ~~(15)~~ is mounted floating in the portion carrying the cover ~~(12)~~.

18. (currently amended) A rotary displacement machine ~~(10)~~ as claimed in Claim 17, wherein the placement of said distributor ~~(15)~~ can be adjusted both angularly and axially along a longitudinal centerline ~~(A)~~.

19. (currently amended) A rotary displacement machine ~~(10)~~ as claimed in Claim 17 ~~any of Claims 17 and 18~~, wherein at least a surface portion of a recess ~~(CAV)~~ provided on the rotor ~~(17)~~ has a conical shape allowing said surface portions to fit together in different ways.

20. (currently amended) A rotary displacement machine ~~(10)~~ as claimed in Claim 17, wherein seal rings ~~(AN)~~ of metal are arranged to stop oil from leaking through the clearance gap between the outer surface of the distributor ~~(15)~~ and the surface of said hole ~~(F)~~ in said cover ~~(12)~~.

21. (currently amended) A rotary displacement machine-(10) as claimed in Claim 20, wherein said rings (AN) are received each in a respective annular seat formed in the surface of said hole-(F).

22. (currently amended) A rotary displacement machine-(10) as claimed in Claim 1, wherein said cover-(12) carries an intake device-(26) and a discharge device-(27), said intake and discharge devices-(26, 27) being each formed with a respective offset groove-(26a, 27a) from a centerline (A) of the distributor-(15).

23. (currently amended) A rotary displacement machine-(10) with radial pistons-(19); rotary displacement machine-(10), comprising:

- a supporting structure-(11, 12);
- a centrally mounted distributor-(15);
- a rotating unit (16)-consisting of a rotor-(17) provided with a number of radially extending cylindrical chambers-(18), wherein each chamber (18)-contains a respective piston-(19) mounted for sliding movement in a first direction along a first axis-(a) coaxial with the longitudinal centerline of the respective cylindrical chamber-(18); and
- means-(30, 31) of bucking the radial thrust from the pistons-(19), said means forming a bearing-(29) in combination with a thrust ring-(28);
- the rotary displacement machine (10)-being characterized in that: said distributor-(15) is mounted floating in the cover -carrying portion-(12).

24. (currently amended) A rotary displacement machine (10)-as claimed in Claim 1~~any one of Claims 1 to 22~~, wherein at least one of the bearings (29, C1 or C4) for the rotor (17)-and/or for coupling the inner and outer rings (28, 30)-together provides frictional drag in which sliding means are provided which comprise at least one layer of an anti-friction plastics material bonded, through an additional layer of a porous metal, to one of the contacting parts or another intervening metal element.

25. (currently amended) A rotary displacement machine-(10) as claimed in Claim 1~~any of the preceding claims~~, wherein said rotor-(17) has a nitrided surface in the area of coupling to said distributor-(15).

26. (currently amended) A hydraulically operated speed variator, characterized in that it incorporates at least one machine (10) as claimed in Claim 1 ~~any of the preceding~~ claims.